Scientific Research Publishing

World Journal of Cardiovascular Diseases, 2026, 16(9), 655-667
https://www.scirp.org/journal/wjcd
ISSN Online: 2164-5337
ISSN Print: 2164-5329

A Multicentric, Prospective, Non-Interventional Observational Study of the Usage Pattern, Safety, and Antihypertensive Effectiveness of Telmisartan (Teleshal™) or Telmisartan plus Hydrochlorothiazide (Teleshal™-H) in Hypertensive Adults from the Democratic Republic of Congo

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How to cite this paper: Mude, T. and Dinaouz, R. (2026) A Multicentric, Prospective, Non-Interventional Observational Study of the Usage Pattern, Safety, and Antihypertensive Effectiveness of Telmisartan (Teleshal™) or Telmisartan plus Hydrochlorothiazide (Teleshal™-H) in Hypertensive Adults from the Democratic Republic of Congo. *World Journal of Cardiovascular Diseases*, **16**, 655-667.
https://doi.org/10.4236/wjcd.2026.169061

Received: July 16, 2026
Accepted: September 7, 2026
Published: September 10, 2026

Abstract

Background: Hypertension is a major public health challenge in sub-Saharan Africa, with the Democratic Republic of Congo (DRC) experiencing a rapidly increasing burden. Despite the availability of effective antihypertensive agents such as telmisartan and telmisartan plus hydrochlorothiazide (HCTZ), real-world data on their usage patterns, safety, and effectiveness in the Congolese population remain limited. **Methods:** This was a prospective, multicenter, non-interventional, observational study conducted across multiple clinical sites in the Democratic Republic of Congo over a 12-week period. Adult patients (≥18 years) with hypertension who were clinically suitable for the prescription of telmisartan (Teleshal™) or telmisartan plus HCTZ (Teleshal™-H) were enrolled. Data on demographics, clinical characteristics, blood pressure, treatment adherence, and adverse events were collected at baseline and at week 12. Changes in systolic and diastolic blood pressure were assessed using paired t-tests. **Results:** A total of 482 patients were enrolled and 388 patients (203 in the telmisartan (Teleshal™) group and 185 in the telmisartan + HCTZ (Teleshal™-H) group) were assigned a study drug and dose. The mean age was 58.60 ± 12.00 years in the telmisartan group and 60.75 ± 11.76 years in the telmisartan + HCTZ group. Females comprised 50.7% and 60.5% of the respective groups. The most common comorbidities were diabetes (29.1% and 42.7%) and dyslipidemia

(29.6% and 27.6%). In the telmisartan group, mean systolic blood pressure (SBP) decreased from 161.54 mmHg at baseline to 144.29 mmHg at week 12 (mean reduction: 10.68%, $P < 0.001$), and mean diastolic blood pressure (DBP) decreased from 95.54 mmHg to 84.91 mmHg (mean reduction: 11.13%, $P < 0.001$). In the telmisartan + HCTZ group, mean SBP decreased from 174.54 mmHg to 144.01 mmHg (mean reduction: 17.49%, $P < 0.001$), and mean DBP decreased from 100.85 mmHg to 83.89 mmHg (mean reduction: 16.82%, $P < 0.001$). SBP reductions increased with dose in both arms, though no formal between-group comparison was performed. Overall, 38.14% of patients achieved blood pressure control (SBP ≤ 140 mmHg and DBP ≤ 90 mmHg) by week 12. Adverse events were reported in only 4.79% and 4.91% of patients in the two groups, respectively, all of mild to moderate severity. Physicians rated the global efficacy and safety as excellent or good in 81.6% of telmisartan-treated patients and 89.9% of telmisartan + HCTZ-treated patients. **Conclusion:** Both telmisartan monotherapy (Teleshal™) and telmisartan/HCTZ combination therapy (Teleshal™-H) delivered statistically and clinically meaningful BP reductions with a favorable safety profile in a real-world DRC hypertensive cohort, confirming their utility as pragmatic options for hypertension management in Sub-Saharan African routine care.

Keywords

Telmisartan, Hydrochlorothiazide, Hypertension, Democratic Republic of Congo, Real-World Evidence, Observational Study, Blood Pressure, Safety

1. Introduction

Hypertension is the leading modifiable cardiovascular risk factor worldwide, accounting for an estimated 9.4 million deaths annually [1] [2]. Each 20-mmHg rise in systolic BP approximately doubles cardiovascular event risk. Although mean BP has declined in many high-income settings, the burden has intensified in low- and middle-income countries, where health-system readiness for chronic BP-lowering therapy is uneven [2]-[4].

Sub-Saharan Africa bears a disproportionate share of this burden: adult prevalence has been reported as high as 46%, with treatment rates commonly below 35% and a striking 99% of hypertensive individuals in some SSA settings lacking both diagnosis and treatment [1] [5] [6]. The 2025 WHO Global Hypertension Report reinforces this gap [4] [6]. Cross-SSA meta-analytic data show that more than 350 million SSA patients with hypertension are projected to be non-adherent by mid-century, with attendant excess cardiovascular risk [7].

The Democratic Republic of Congo exemplifies these challenges. Community- and facility-based studies report adult hypertension prevalence of 30% - 40%, with 54% of hypertensive individuals unaware of their condition, only 29% on treatment, and approximately 12% at goal BP. The May Measurement Month 2018 DRC survey identified hypertension in 26.1% of 18,719 screened adults in Kin-

shasa, with 46.3% awareness, 29.6% treatment coverage, and a 12.7% all-hypertensive control rate [8]. Data from Boma reported 35% prevalence with 56.1% unawareness and only 47.9% control among aware, treated participants, and Bandundu community-level prevalence reached 34.5% [9]. Together, these data establish that the gulf between pharmacologic potential and BP control in the DRC is one of the widest in the world [5] [10] [11].

Antihypertensive therapy reduces stroke by 35% - 40%, myocardial infarction by 20% - 25%, and heart failure by over 50%. Among classes, angiotensin II receptor blockers are well established. Telmisartan is a long-acting ARB with high AT_1-receptor affinity, the longest half-life among ARBs, and the largest volume of distribution, supporting consistent 24-hour BP control without disturbing the day-night BP pattern. Ambulatory monitoring confirms trough efficacy at the recommended 40 - 80 mg once-daily doses, and head-to-head and meta-analytic data show telmisartan produces greater BP reduction than several other ARBs as monotherapy and as part of combination therapy [12] [13].

For larger BP reductions, ARB + low-dose thiazide combinations are validated: thiazides activate compensatory renin-angiotensin-aldosterone system up-regulation, which ARBs blunt, generating synergy on both circulating and tissue-level RAAS activation [14] [15]. Telmisartan plus hydrochlorothiazide has consistently outperformed other ARB/HCTZ combinations, including valsartan/HCTZ and losartan/HCTZ, particularly in the high-risk early-morning hours [12] [16] [17]. White *et al.* documented −24.6/−18.2 mmHg with telmisartan 80 mg/HCTZ 25 mg versus placebo and superiority over valsartan 160 mg/HCTZ 25 mg; a parallel cohort reproduced −24.0/−17.6 mmHg reductions [18]. Consolidated across 50 studies, the tolerability of telmisartan alone or with HCTZ is indistinguishable from placebo [19].

Despite this evidence base, prescribing in SSA is shaped by health-system realities that differ from the trial populations [10]. Non-adherence is common in Kinshasa, driven by pill burden, cost, and limited counselling [7] [11]. Single-pill combinations and WHO HEARTS-style integration of hypertension management into primary care, including nurse-led task-shifting, have been advanced as scalable responses [5]-[7] [11].

Against this backdrop, an explicit evidence gap exists for the Congolese population: real-world data on telmisartan monotherapy and telmisartan/HCTZ combination therapy in DRC routine practice are limited. The CRYSTEL study was therefore designed to generate real-world evidence on the use of telmisartan and telmisartan plus HCTZ in Congolese patients with hypertension, providing valuable insights for clinicians, policymakers, and patients in a resource-limited setting.

2. Methods

2.1. Study Design and Setting

CRYSTEL was a non-interventional, multicentre, prospective, observational study conducted in healthcare facilities across the Democratic Republic of Congo be-

tween Q2 2022 and Q4 2022. The study was implemented in accordance with routine clinical practice; no investigational intervention was imposed, and treatment selection, dosing, and any subsequent dose adjustments remained entirely at the discretion of the attending physician. The total treatment/observation duration was 12 weeks. The protocol stated that approximately 482 subjects with hypertension would be enrolled across multiple sites, with site numbers able to vary according to recruitment rates or site closure. Between 15 and 18 sites participated in the study, comprising a mix of general hospitals, private hospitals, and primary health care centres in the Democratic Republic of Congo. The present analysis is based on the locked clinical database prepared at the conclusion of the field phase.

2.2. Study Population

Adult patients aged ≥18 years with a diagnosis of hypertension who, in the judgment of the treating physician, were clinically suitable for either telmisartan (Teleshal™) monotherapy or telmisartan plus hydrochlorothiazide (Teleshal™-H) combination therapy were eligible for inclusion, provided they were willing to provide informed consent for the use of their personal and health-related data in the study. Patients were stratified post hoc into the two exposure cohorts of interest: telmisartan alone, or telmisartan in fixed combination with HCTZ at the doses routinely available in DRC practice (40/12.5 mg, 80/12.5 mg, or 80/25 mg).

Exclusion criteria were: 1) any contraindication to telmisartan or telmisartan/HCTZ as listed in the locally approved prescribing information; 2) any medical or non-medical factor that, in the physician's judgment, would impede study participation; and 3) pregnancy, lactation, or being a woman of childbearing potential not willing to use an effective barrier contraceptive method throughout the observation period.

2.3. Treatment Exposure and Follow-Up

Each participant completed two protocol visits: Visit 1 (baseline) and Visit 2 (first follow-up at 3 months ± 7 days, corresponding to the protocol-specified 12-week treatment/observation duration). At Visit 1, investigators recorded demographic data, relevant medical history, baseline vital signs, and detailed information regarding the prescribed study drug, including dose strength. Visit 2 captured treatment adherence, any change in dose regimen, body weight, BP, treatment-emergent adverse events, and a physician-led four-point global assessment of combined efficacy and safety ("Poor" to "Excellent").

Blood pressure was measured using a standard Omron digital BP monitor by the treating physician at each site, consistent with common clinical practice in the DRC, providing a reasonably standardised measurement device across sites.

2.4. Outcome Measures

Primary outcome. The primary objective was to characterize the real-world

utilization pattern of telmisartan and telmisartan/HCTZ in hypertensive adults in DRC, including dose distribution by regimen.

Secondary effectiveness outcomes. Secondary outcomes were: 1) the within-group change in SBP and DBP from baseline to Visit 2; 2) the proportion of participants achieving BP control, defined as SBP ≤ 140 mmHg and DBP ≤ 90 mmHg; and 3) the dose-stratified analysis of BP change and BP control.

Secondary safety outcome. Adverse events reported between Visit 1 and Visit 2 were recorded with verbatim description, severity (mild, moderate, or severe), and the clinical action taken (none, dose reduction, discontinuation, or other). Physician global assessment of efficacy and safety (four-point scale: Poor/Fair/Good/Excellent) provided an integrated effectiveness/tolerability judgement.

2.5. Statistical Analysis

Data were summarized using descriptive statistics (means, standard deviations, frequencies, and percentages) for demographic, prescribing, BP, and safety variables. For each BP outcome, within-group change from baseline to Visit 2 was tested using a paired t-test, with a two-sided P-value < 0.05 considered statistically significant. Analyses were performed on the available patient population at each study site using the locked clinical dataset; no imputation of missing values was performed. Dose-stratified BP analyses followed the same paired t-test framework.

2.6. Ethical Considerations

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and applicable local regulations governing non-interventional research. Each participant provided informed consent for the use of personal and health-related data prior to study entry. The protocol was reviewed by the relevant institutional ethics committees at participating sites.

3. Results

3.1. Patient Disposition and Baseline Characteristics

A total of 482 patients were enrolled and 388 patients (203 in the telmisartan (Teleshal™) group and 185 in the telmisartan + HCTZ (Teleshal™-H) group) were assigned a study drug and dose. The mean age was 58.60 ± 12.00 years in the telmisartan group and 60.75 ± 11.76 years in the telmisartan + HCTZ group. In both groups, the majority of patients were in the age group 61 - 70 years (30.5% and 33.5%, respectively). Females comprised 50.7% of the telmisartan group and 60.5% of the telmisartan + HCTZ group (**Table 1**).

The most prevalent risk factors were alcohol consumption (50.2% in telmisartan group, 36.2% in telmisartan + HCTZ group) and physical inactivity (23.6% and 51.4%, respectively). The majority of patients were newly diagnosed or had hypertension for less than 3 years. A family history of hypertension was present in approximately 44% of patients in both groups (**Table 2**).

Table 1. Baseline demographic and clinical characteristics.

Characteristic	Telmisartan (N = 203)	Telmisartan + HCTZ (N = 185)
Age (years), mean ± SD	58.60 ± 12.00	60.75 ± 11.76
Sex, n (%)		
Female	103 (50.7%)	112 (60.5%)
Male	100 (49.3%)	73 (39.5%)
Risk Factors, n (%)		
Tobacco use	34 (16.7%)	36 (19.5%)
Alcohol consumption	102 (50.2%)	67 (36.2%)
Physical inactivity	48 (23.6%)	95 (51.4%)
Poor dietary habits	58 (28.6%)	56 (30.3%)
Duration of Hypertension, n (%)		
Newly diagnosed	60 (30.8%)	36 (19.7%)
6 months - 1 year	24 (12.3%)	28 (15.3%)
1 - 3 years	55 (28.2%)	76 (41.5%)
>3 years	56 (28.7%)	43 (23.5%)
Family History of Hypertension, n (%)		
Yes	89 (43.8%)	83 (44.9%)
No	114 (56.2%)	102 (55.1%)
Comorbidities, n (%)		
Diabetes	59 (29.1%)	79 (42.7%)
Dyslipidemia	58 (29.6%)	51 (57.6%)
Chronic kidney disease	8 (3.9%)	4 (2.2%)
Heart failure	19 (9.4%)	20 (10.8%)

Table 2. Participant disposition summary.

Visit	Patients with data available
Baseline (enrolment)	482
Assigned a study drug and dose (Telmisartan N = 203; Telmisartan + HCTZ N = 185)	388

This is an uncontrolled study conducted in a real-world clinical setting, and no protocol-mandated visit window or retention procedure was enforced. Physicians at the participating sites cited three recurring reasons for missing follow-up and non-completion: 1) inability of patients with limited financial means to continue affording medication, 2) non-adherence to the treatment regimen among some patients with alcohol use, and 3) discontinuation of follow-up visits by patients who felt their symptoms had improved.

All effectiveness and safety estimates in this report are available-case analyses—

that is, they are calculated using all patients with data at the relevant timepoint (s), rather than a fixed intention-to-treat cohort carried forward. Because attrition was not random (it was associated with cost, adherence, and perceived improvement), available-case estimates of BP reduction may be biased toward patients who remained engaged in care and could, in principle, over- or under-estimate the true population-level effect.

3.2. Utilization Pattern

Dose Distribution

In the telmisartan group, the majority of patients (45.8%) were prescribed the 40 mg dose, followed by 80 mg (33.0%) and 20 mg (20.7%). In the telmisartan + HCTZ group, the most commonly prescribed dose was 40/12.5 mg (48.6%), followed by 80/12.5 mg (30.3%) and 80/25 mg (21.1%). This distribution indicates that most patients were initiated on moderate doses, with dose escalation based on response and tolerance (Figure 1 and Figure 2).

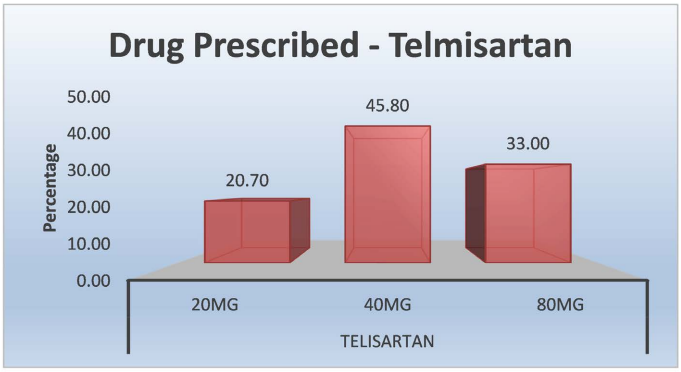

Figure 1. Distribution of drug potency of telmisartan.

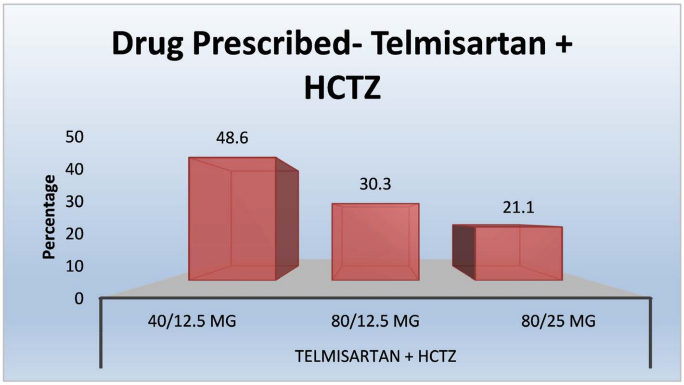

Figure 2. Distribution of drug potency of Telmisartan + HCTZ.

3.3. Changes in Blood Pressure

3.3.1. Systolic Blood Pressure

Significant reductions in systolic blood pressure were observed in both groups from baseline to week 12 (Table 3).

Table 3. Changes in systolic blood pressure from baseline to week 12.

Parameter	Baseline (Mean ± SD)	Week 12 (Mean ± SD)	Mean % Change	P-value
Telmisartan	161.54 ± 20.69	144.29 ± 17.70	**−10.68%**	**<0.001**
Telmisartan + HCTZ	174.54 ± 24.24	144.01 ± 15.61	**−17.49%**	**<0.001**

In the telmisartan group (n = 166 with paired baseline and Week 12 measurements), mean SBP decreased from 161.54 ± 20.69 mmHg at baseline to 144.29 ± 17.70 mmHg at week 12 (−10.68%; P < 0.001). In the telmisartan + HCTZ group (n = 163), mean SBP decreased from 174.54 ± 24.24 mmHg to 144.01 ± 15.61 mmHg (−17.49%; P < 0.001). Both reductions were statistically significant within their respective groups; no between-group statistical comparison was performed.

3.3.2. Dose-Response Relationship for SBP

A dose-related pattern was observed in both groups, with SBP reduction increasing at higher doses: 1) Telmisartan Group: 20 mg, 3.27% reduction (P = 0.2020); 40 mg, 8.80% reduction (P < 0.001); 80 mg, 15.91% reduction (P < 0.001). 2) Telmisartan + HCTZ Group: 40/12.5 mg, 12.90% reduction (P < 0.001); 80/12.5 mg, 19.87% reduction (P < 0.001); 80/25 mg, 23.93% reduction (P < 0.001).

3.3.3. Diastolic Blood Pressure

Significant reductions in diastolic blood pressure were also observed in both groups (Table 4).

Table 4. Changes in diastolic blood pressure from baseline to week 12.

Parameter	Baseline (Mean ± SD)	Week 12 (Mean ± SD)	Mean % Change	P-value
Telmisartan	95.54 ± 16.06	84.91 ± 14.05	**−11.13%**	**<0.001**
Telmisartan + HCTZ	100.85 ± 18.15	83.89 ± 12.82	**−16.82%**	**<0.001**

In the telmisartan group (n = 165), mean DBP decreased from 95.54 ± 16.06 mmHg at baseline to 84.91 ± 14.05 mmHg at week 12 (−11.13%; P < 0.001). In the telmisartan + HCTZ group (n = 160), mean DBP decreased from 100.85 ± 18.15 mmHg to 83.89 ± 12.82 mmHg (−16.82%; P < 0.001).

3.3.4. Dose-Response Relationship for DBP

1) Telmisartan Group: 20 mg, 5.69% reduction (P = 0.032); 40 mg, 10.12% reduction (P < 0.001); 80 mg, 14.64% reduction (P < 0.001). 2) Telmisartan + HCTZ Group: 40/12.5 mg, 12.21% reduction (P < 0.001); 80/12.5 mg, 17.88% reduction (P < 0.001); 80/25 mg, 24.89% reduction (P < 0.001).

3.3.5. Blood Pressure Control Achievement

Overall, 38.14% of patients achieved blood pressure control (SBP ≤ 140 mmHg and DBP ≤ 90 mmHg) by week 12. In the telmisartan group, 36.94% achieved control, while in the telmisartan + HCTZ group, 39.45% achieved control. The

highest control rates were observed with telmisartan 20 mg (45.23%) and telmisartan + HCTZ 80/25 mg (46.15%) (Table 5).

Table 5. Duration of hypertension.

Duration of Hypertension	Telmisartan Frequency	Telmisartan Percent	Telmisartan + HCTZ Frequency	Telmisartan + HCTZ Percent
Newly Diagnosed	60	30.8	36	19.7
6 months to 1 year	24	12.3	28	15.3
1 to 3 years	55	28.2	76	41.5
3+ years	56	28.7	43	23.5
Total	195	100.0	183	100.0

3.4. Patient Adherence

At week 12, adherence to treatment was assessed. In the telmisartan group, 57.1% of patients were rated as having good adherence, while in the telmisartan + HCTZ group, 60.9% were rated as having good adherence. The moderate to high adherence rates observed are encouraging and suggest that patients were generally compliant with their medication regimen.

3.5. Adverse Events

Adverse events were reported in only 4.79% of patients in the telmisartan group (8 out of 167 patients) and 4.91% of patients in the telmisartan + HCTZ group (8 out of 163 patients). The reported adverse events included dizziness, headache, physical asthenia, and insomnia. All adverse events were of mild to moderate severity. In most cases, no action was taken, and the issues resolved spontaneously. In a small number of cases, the dose of study medication was reduced. No serious adverse events were reported.

3.6. Global Assessment of Efficacy and Safety by Physicians

Physicians rated the global efficacy and safety of telmisartan and telmisartan + HCTZ as: (Figure 3)

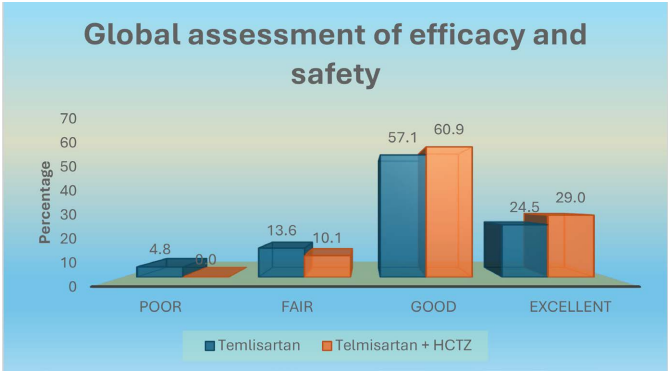

Figure 3. Global assessment of efficacy and safety.

Overall, 81.6% of physicians rated the efficacy and safety of telmisartan as excellent or good, while 89.9% rated telmisartan + HCTZ as excellent or good, indicating a high level of clinical satisfaction with both therapies, with a preference for the combination therapy.

4. Discussion

The CRYSTEL study provides prospective, multicenter, real-world evidence on the use, effectiveness, and tolerability to telmisartan (Teleshal™) and telmisartan/HCTZ (Teleshal™-H) combination therapy in 388 hypertensive adults managed under routine conditions in the DRC. Three principal observations emerge: firstly, both regimens produced statistically and clinically meaningful reductions in SBP and DBP over 12 weeks, with markedly larger reductions in the combination arm; secondly, BP goal attainment at this short horizon was 38.14% overall, in line with the upper range of DRC and SSA control benchmarks; and thirdly, both regimens were very well tolerated, with low AE rates, predominantly mild severity, and minimal need for clinical action.

Within the CRYSTEL cohort, telmisartan 40 mg was the modal monotherapy dose (45.8%) and the lowest combination strength (40/12.5 mg) was the modal FDC dose (48.6%). This distribution closely mirrors the prevailing pattern of single-agent ARB prescribing documented across SSA, where renin-angiotensin system blockers are increasingly prioritized and clinicians commonly start with mid-range doses and titrate upward when response is inadequate [10] [20]. The frequency of monotherapy initiation (52.3%) versus combination initiation (47.7%) reflects a prescribing culture still anchored to monotherapy as the default, even though guidelines increasingly recommend earlier combination therapy for patients with BP ≥ 20/10 mmHg above goal or higher cardiovascular risk [10]. The fact that 30.8% of patients in the monotherapy arm and 19.7% in the combination arm were newly diagnosed indicates that CRYSTEL captured a meaningful share of incident disease, consistent with local evidence showing high proportions of undiagnosed hypertension in DRC urban centers [8] [9] [11].

The within-group SBP reductions of −10.68% (telmisartan) and −17.49% (telmi sartan/HCTZ) are broadly consistent with the direction of randomized and meta-analytic evidence on telmisartan-based regimens [18] [19], though the absolute mmHg reductions reported in those trials should be compared cautiously against this study's percentage figures given differences in baseline BP and design. No between-group statistical test was performed in this study, so the larger reduction in the combination arm cannot be attributed to superior efficacy over monotherapy without accounting for the higher baseline SBP and higher-risk profile of combination-arm patients. The dose-related pattern observed—from −3.27% (telmisartan 20 mg) to −23.93% (telmisartan/HCTZ 80/25 mg, $P < 0.001$)—is consistent with, but does not on its own establish, a causal dose-response relationship, since dose was selected by the treating physician rather than randomly assigned.

The 38.14% overall BP control rate—36.94% in the monotherapy arm and

39.45% in the combination arm—compares favourably with population-level benchmarks from DRC and SSA [8] [9] [11]. The May Measurement Month 2018 DRC survey reported an overall control rate of 12.7% among all hypertensive respondents and 43.0% among those on treatment [8]. Regional reviews indicate that across SSA, control rates often lie between 10%-20% among all hypertensive adults [1] [10] [21]. Against this backdrop, the CRYSTEL control rates of ~37% - 39%, achieved within a single 12-week observation window, indicate that telmisartan-based regimens are clinically effective when actually deployed in DRC primary and specialist care.

The dose-stratified control rates exhibit a non-monotonic pattern: 45.23% at telmisartan 20 mg versus 35.48% at 40 mg versus 34.32% at 80 mg, and 37.78%/37.50%/46.15% across the three combination strengths. This is consistent with confounding by indication—patients initiated on higher doses tend to have higher baseline BP, so their proportional attainment of the ≤140/90 mmHg target may be lower despite larger absolute reductions [7]. The highest-dose combination stratum (80/25 mg) achieved 46.15% control, supporting the use of the strongest FDC in patients with the highest pre-treatment BP.

The AE rates observed (4.79% telmisartan; 4.91% telmisartan/HCTZ), with a clear predominance of mild events (75.0% and 87.5%, respectively), are in line with the consolidated safety profile of these agents [19]. In 75% (telmisartan) and 87.5% (combination) of AE episodes, no clinical action beyond continuation was required; in the remainder, dose reduction sufficed, and there were no severe AEs.

The CRYSTEL study carries the inherent limitations of non-interventional, observational designs. There was no randomization, and prescribing was at the discretion of the attending physician—creating potential for confounding by indication: patients with higher baseline BP, more comorbidities, or established diabetes may have been preferentially channeled into the combination arm or higher-dose strata. This is reflected in the higher baseline SBP (174.54 vs 161.54 mmHg), higher diabetes prevalence (42.7% vs 29.1%), and higher physical-inactivity rate (51.4% vs 23.6%) in the combination arm. Other limitations include: a 12-week observation window constraining inference about durability of BP control and cardiovascular endpoints; absence of standardized 24-hour ambulatory BP monitoring. Formal treatment-naive/switched/continuing status and concomitant antihypertensive medication use were not systematically captured.

5. Conclusion

The CRYSTEL study demonstrates that telmisartan monotherapy (Teleshal™) and telmisartan plus hydrochlorothiazide combination therapy (Teleshal™-H) produce statistically significant within-group reductions in systolic and diastolic blood pressure over a 12-week observation period in Congolese hypertensive adults managed under routine clinical practice, with reductions that increased with prescribed dose. Approximately 38.14% of the total cohort achieved BP target with about 36.94% in the monotherapy arm and 39.45% in the combination arm. Both regimens were well tolerated, with AE rates of approximately 4.8% - 4.9% and a

predominance of mild events requiring no clinical action. These findings support the wider use of telmisartan-based regimens—including fixed-dose single-pill combinations—to address the persistently low BP control rates in the DRC.

Author Contributions

Dr. Tresor Mude & Dr. Raymond Dinaouz conceived and designed the study. Dr. Tresor Mude & Dr. Raymond Dinaouz collected and analyzed the data. Dr. Tresor Mude & Dr. Raymond Dinaouz prepared the original manuscript draft. Dr. Tresor Mude & Dr. Raymond Dinaouz critically reviewed and edited the manuscript. Dr. Tresor Mude & Dr. Raymond Dinaouz supervised the study. All authors reviewed and approved the final manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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